

ABSTRACT

Provided are a cathode material capable of improving battery characteristics by improving its structural stability, a method of manufacturing the cathode material, and a battery using the cathode material. A cathode comprises a complex oxide represented by $\text{Li}_a\text{Mn}_b\text{Cr}_c\text{Al}_{1-b-c}\text{O}_d$ or $\text{Li}_{1+e}(\text{Mn}_f\text{Cr}_g\text{M}_{1-f-g})_{1-e}\text{O}_h$. The values of a through h are within a range of $1.0 < a < 1.6$, $0.5 < b + c < 1$, $1.8 < d < 2.5$, $0 < e < 0.4$, $0.2 < f < 0.5$, $0.3 < g < 1$, $f + g < 1$ and $1.8 < h < 2.5$, and M is at least one kind selected from the group consisting of Ti, Mg and Al. The crystalline structure can be stabilized by Ti, Mg or Al, and charge-discharge cycle characteristics can be improved. Moreover, the charge capacity can be improved by an excessive amount of lithium, and even after charge, a certain amount of lithium remains in the crystalline structure, so the stability of the crystalline structure can be further improved.